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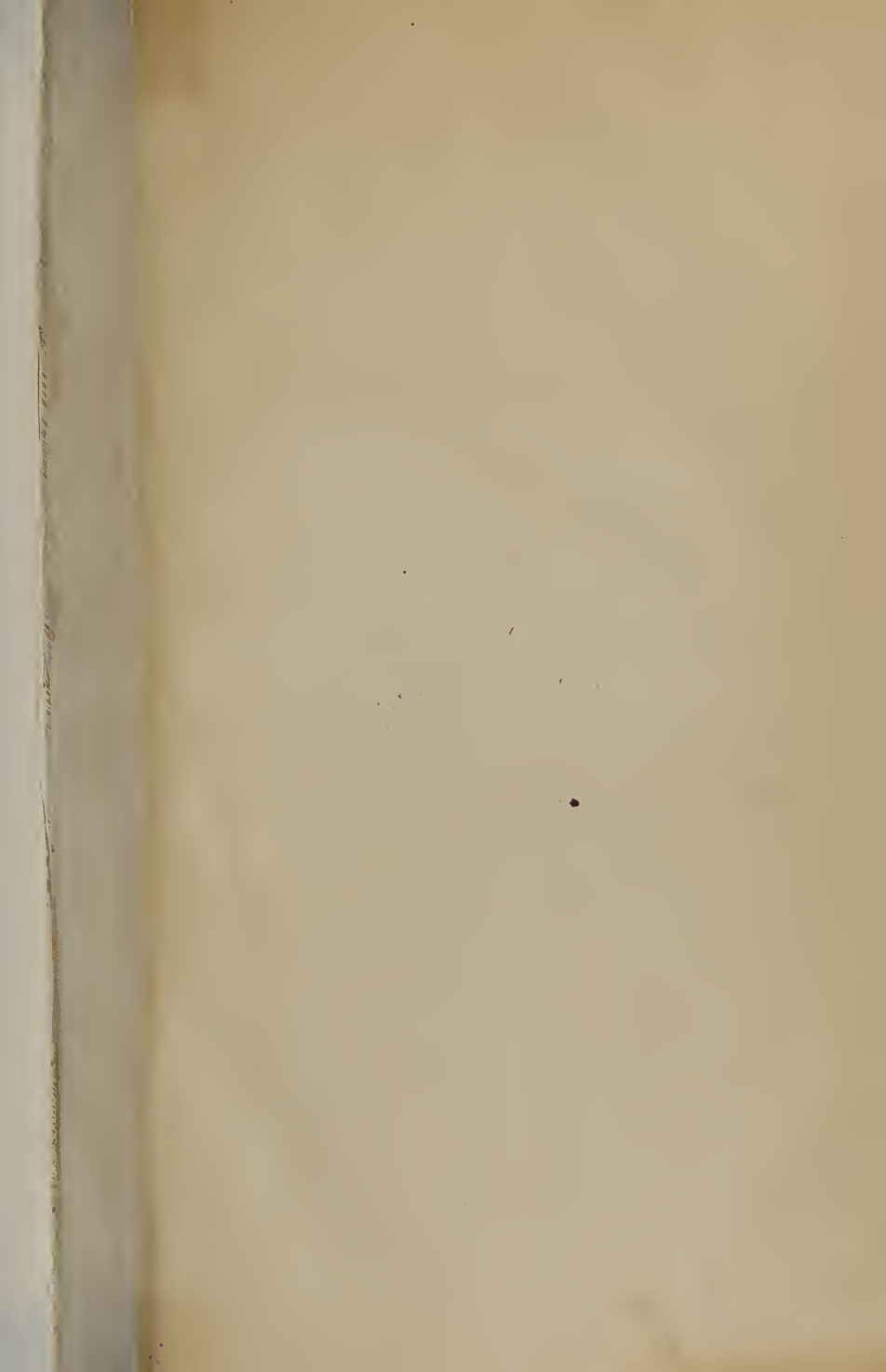
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OBSERVATIONS ON YELLOW FEVER

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OBSERVATIONS

ON

**YELLOW FEVER;**

AND ITS

RELATIONS TO QUARANTINE,

AND OTHER

**HYGIENIC MEASURES,**

BY

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S. L. GRIER, M. D.

Office  
NY  
26386

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## PREFACE.

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The following observations—the result of some investigation of the subject, made during a period of leisure not otherwise available—are addressed to all, whether professional or non-professional, who feel interested in the matter under discussion.

It is recorded that “from no other cause than the errors of physicians, who constantly maintained that the disease, then epidemic, was not contagious, happened that terrible visitation which, in 1743, ravaged the city of Messina and its vicinity with the loss of above forty-three thousand individuals in the short space of only three months.”

From the frequent sneers against the medical profession in this city, we would suppose the late disastrous epidemics were ascribed to a similar cause. They are, say some, so obstinately wedded to their theories that no appeal from suffering humanity can touch them. Others say that “Commerce is King” and all other considerations must bow to its behests, and therefore it is that no protective measures are attempted to save the city from an imported pestilence. A third reason assigned for the existing state of things is still more discreditable to those concerned, to-wit: that many of the citizens of New Orleans, being acclimated and believing themselves exempt from the disease, are therefore entitled to all the benefits and immunities of that exemption. To neither of these causes do we believe the neglect of proper precautionary means is justly chargeable, but rather to the real obscurity which invests the subject, together with a characteristic apathy of the citizens of New Orleans in regard to all matters of public concern. “That which is every one’s business is no one’s business,” and therefore rarely receives due attention, and of course while the importation of Yellow Fever is involved in so much doubt, it is not likely to gain much consideration. The history of the disease in this country seems to favor the idea of its foreign origin, inasmuch as those decennial periods in which commerce was most active the disease was most rife, and *vice versa*. Nor do we conceive there is anything incredible in the idea of such a disease being transported. It is a well attested fact, that in 1854 the infection of Yellow Fever was carried from this city to Newark, N. J., in a bundle of rags; and we have somewhere read, that in Breslau, in 1542, the



contagion of a plague, which lay buried in a fomes of old linen, for fourteen years, spread, on the opening of the cloth, and destroyed six thousand people. This partakes somewhat of the marvellous, but to our mind not more so than the fact that the cereal seeds found in Her-  
culaneum and the Pyramids will still germinate and reproduce their kind. The doctrine of the imported infection of Yellow Fever in this city has no such marvel attached to it, but is a simple truth, which is every year receiving additional testimony. If the following pages serve to throw the feeblest ray of light on the subject, the purpose of the writer will have been accomplished. If there is any efficacy in quarantine measures, it is desirable that New Orleans should not be deprived of such a benefit. A year ago the city of Charleston had presented for its acceptance the best devised plan and most complete system of quarantine ever instituted in this country. The plan was rejected by the municipal powers, and, during the last summer, the most grievous epidemic which ever visited them has prevailed, introduced, we are assured on the best authority, by the ships of commerce. Let New Orleans profit by the experience of her sister city, and spare no efforts to reach her legitimate position, and be in population and general prosperity what she is confessedly in commercial importance, the second city of the Union.

NEW ORLEANS, Dec. 23, 1854.



# OBSERVATIONS ON YELLOW FEVER AND QUARANTINE.

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In making a few observations on the origin and mode of propagation of Yellow Fever, and the relation which it bears to Quarantine and other hygienic measures, it will be necessary first to state certain facts which may be considered as established in regard to this disease, so that a discussion of a variety of topics in connection with the subject may be avoided, and thus the presentation of essential points be restricted within appropriate limits.

1st. It may, we think, be safely asserted that Yellow Fever is not of American origin—that its course can be traced to the eastern continent, in the same manner that we trace epidemic cholera to its nativity in remote India.

2nd. It is now *naturalized* or endemic in certain parts of inter-tropical America. The exact limits of this Yellow Fever zone, North and South, have not yet been determined.

3rd. It is a disease which has prevailed almost exclusively in seaport towns, and in places directly in communication with these seaports, either in the way of travel or of trade. So uniformly has this been the case that it may with propriety be styled a *coast* disease. To establish this position it is only necessary to mention some of the cities and towns in which it has most extensively prevailed—such as New York, Philadelphia, Baltimore, Norfolk, Wilmington, Charleston, Savannah, Pensacola, Mobile, New Orleans, Havana, Vera Cruz, Rio Janeiro, Seville, Cadiz, Gibraltar, Malaga, Barcelona, &c.

4th. Yellow Fever, in common with other epidemics, has a *periodical* character. It has a tendency to recur after an interval, during which it has been gradually subsiding both in force and extent. Thus, for a series of years about the close of the last century and the beginning of the present, it raged in the cities along our northern sea-board, then, subsiding for a time, it again prevailed with renewed force during the decade, commencing about the year 1820. The late epidemic of 1853 may also be considered as a fresh invasion of the disease, being marked

by certain distinctive features in its action and mode of propagation. This periodicity has been termed by medical writers the *cyclical* character of epidemics.

5th. This disease obeys another general law of epidemics, which is a disposition to travel from the place of their origin and extend over surrounding and even distant countries. This general law was, perhaps, most plainly exemplified in the progress of the first cholera epidemic, which reached our shores in 1832. Its course could be traced with as much precision as the route of a kingly procession or the march of an invading army. This feature is not so apparent in Yellow Fever epidemics, but we think all who have observed their mode of action will admit that they partake more or less of this character. This is known as the *migratory* characteristic of epidemics, and in conformity with this law we regard the fever which visited the southern Atlantic cities this year as but an extension of the epidemic which commenced its course in the United States in 1853, beginning at New Orleans. This is evident from the fact they both were marked by certain peculiarities which distinguish them from all previous epidemics; and, should we infer from past experience, we would expect to hear of the same disease visiting next summer the towns of Wilmington and Norfolk, and possibly the great cities, Baltimore, Philadelphia and New York.

6th. An epidemic of Yellow Fever has a fixed and definite duration, which is said to be about sixty days. A certain degree of cold, however, will cut short such an epidemic before the expiration of that time.

7th. A high range of temperature is pre-requisite to the production of epidemic Yellow Fever. According to some writers it has never prevailed except during the season when the temperature reaches and continues for a time above 80 deg. Fahrenheit. In this feature it is contrasted with the *plague*, which ceases under so high a range of temperature.

8th. Yellow Fever, in its epidemic forms, has a natural tendency to prevail in towns and cities situated in miasmatic districts, and in the parts of such towns where the poorer classes are crowded together, without sufficient room and destitute of the comforts of life. That neither of these conditions constitute the essential cause of the disease is evident from the fact that it often prevails where no such conditions exist, and that these conditions are often combined and in full force without the production of the disease.

9th. Yellow Fever is a disease *sui generis* and peculiar. Not, as some

suppose, an aggravated type of our endemic bilious fever, but as specific in its character as scarlet fever or any of the exanthemata. This fact is demonstrated by the next postulate.

10th. That an attack of the disease gives exemption to the individual in all subsequent epidemics. The exceptions to this rule are not sufficient to invalidate the general truth. This feature serves to distinguish it from our ordinary endemic fevers, and seems to ally it with another class of diseases which are generally supposed to be contagious.

11th. The incursion of an epidemic of Yellow Fever into a town is not abrupt, but rather gradual; starting with one or two cases, after which a pause ensues, varying from five to twenty days, during which the poisonous element seems to reproduce itself, when it again breaks forth and spreads rapidly and incessantly.

12th. Yellow Fever if not absolutely *contagious* is at least *communicable* under certain conditions and circumstances, and has been frequently transmitted by subjects of the disease and by fomites.

This proposition has been heretofore combatted by numerous and strong opposers. It will now, we think, be generally conceded.

The foregoing positions are, we think, incontrovertible, but not, however, beyond the reach of all cavil, for there seems to be nothing like unity of opinion in any of the theories of medicine; and, in reference to the cause of Yellow Fever, the proverbial disagreement of medical men is fully maintained; but there are certain principles in this as well as in other departments of medical science which may be considered as firmly established, notwithstanding the cavils and objections which are brought to bear against them.

We will now proceed to state certain other propositions in regard to the mode of propagation and diffusion of Yellow Fever, which are not so well settled, and which are still the subjects of warm and sometimes bitter controversy.

1st. Yellow Fever, *in its epidemic form*, does not originate in the cities of the United States where it has hitherto prevailed, but has always been introduced either in the hold of vessels coming from infected ports, in goods, or by subjects of the disease.

2nd. The epidemic virus thus conveyed to our shores is not extended and diffused through the medium of the atmosphere, except to a very limited extent, differing in this respect from a class of epidemics of which *influenza* may be offered as an example, and that it is more allied in its mode of propagation and manner of progression to another class

of epidemics which are known to be contagious in their character, of which class *scarlet fever* may be cited as an instance.

3rd. These positions being established, it follows, as an inevitable conclusion, that a well devised and rigorously enforced quarantine would be effectual in preventing the ravages of this formidable epidemic in this city.

Before attempting to support these propositions by such testimony as we may be able to collect, we will endeavor to define certain terms in very common use in the discussion of the general subject of Yellow Fever.

*Contagion* is a word on the lips of every one, and perhaps no word in the language has been more vaguely used than this, both among medical men and others. It should mean strictly *the propagation of disease from one individual to another by actual contact*. It has always, however, been used in a wider sense, and is made to embrace a class of diseases which are more properly expressed as infectious—the term *infection* signifying *the propagation of disease by effluvia from persons or fomites*.

To use the word *contagion* in its wider and more popular sense, it embraces three distinct classes of diseases :

1st. Those which are communicated only by contact, and having no poisonous exhalations do not infect the surrounding atmosphere; of this class are *syphilis*, *hydrophia* and *psoriasis*, vulgarly the itch.

2nd. Those which are communicable by contact, and also by exhalations pervading the atmosphere more or less diffusely; such are *small pox*, *measles*, *scarlet fever*, &c.

3rd. Those which are transmitted from the sick to the well through the medium of the atmosphere immediately surrounding the patient, but only under certain conditions, by virtue of which the atmosphere is rendered more liable to be the conductor of the specific virus. This class includes *plague*, *dysentery*, the various forms of *typhus*, and, according to some writers, *Yellow Fever* and *cholera*.\*

*Fomites* is a term applied to any and all substances imbued with principles of a contagious or infectious nature.

The terms *sporadic*, *endemic* and *epidemic* also require to be distinctly defined. The first is applied to occasional diseases which occur without any general or prevailing cause, the name denoting any thing scattered here and there like seeds.

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\* Hosack on Contagion, New York, 1814.

*Endemic* is used to express all diseases which are peculiar to the inhabitants of particular countries, and which are native diseases in those countries.

*Epidemic* is a term applied to those diseases which prevail among the inhabitants of a city or country, but which are not necessarily native in said places and may be extended to other places either neighboring or more remote.

These latter distinctions we consider essentially important in the investigation of Yellow Fever and its mode of propagation, for it is possible that this disease may prevail in this city in all three of these forms, and perhaps the conflicting theories and contradictory statements which have been so long and so constantly before the public mind are in part to be attributed to the fact that these distinctions have been practically ignored; thus, *cholera* has been known from time immemorial in its sporadic and endemic form, but as an epidemic it is a disease of the nineteenth century—the most modern and most terrible of all diseases. In 1853 sporadic cases of Yellow Fever occurred in this city, prior to the invasion of the great epidemic of that year, and which seemed to have no connection with the epidemic; that is, they were not foci of infection from which the epidemic influence was extended. Dr. Fenner, in his valuable history of that epidemic, (the more valuable because it presents a candid statement of facts, allowing each one to draw his own conclusions) has shown that the disease “first prevailed to an *epidemic extent* in the region bordering on the junction of the First and Fourth Districts, extending from the river back and around the Water Works;” but a month previous to this, cases had occurred on Gormley’s Basin, a mile or more to the rear of this district; and it is well known that these first cases did not communicate the disease to any one in that neighborhood, but that the epidemic did not reach that quarter until a late period, and then only by extension of the disease from the front part of the city. Now, whether these sporadic cases were produced by the same cause which gave rise to the epidemic in front or not, the fact that the disease did prevail in these two distinct forms is undeniable, and that is all that for the present we contend for.

We wish our readers to bear these distinctions in mind, inasmuch as what we have to say is on the subject of *epidemic* Yellow Fever; and we believe that more light is to be elicited from a study of the general laws which govern epidemics than by the everlasting discussion of the question of contagion and non-contagion, which we conceive has very



little pertinence to the subject of epidemic diseases, unless, indeed, the word be used exclusively in its popular sense, and its etymological meaning be entirely repudiated.

In a very able essay on epidemics and their mode of propagation, which appeared in the British Foreign Medical and Chirurgical Review for January, 1853, from the pen of Dr. Wm. B. Carpenter, (and we could mention no name of more commanding authority in the medical world) the theory is advanced, that the cause or origin of epidemics is of a two-fold character—the combination of a foreign or external element with a certain local condition is essential to their production and propagation. This, we believe, is the only view which is competent to explain and reconcile the apparently conflicting *facts* which are on record in regard to Yellow Fever. For example, during the summer of 1853 some sixty cases of Yellow Fever were carried into the city of Memphis; they were found in different parts of the town; were treated there; and some of them died and were buried by the citizens; but in no instance was the disease transmitted to others, nor was there any epidemic influence generated in that city. During the past summer we witnessed six cases of undoubted Yellow Fever in the Pennsylvania Hospital, at Philadelphia, in persons recently from Charleston, Savannah or the West Indies; most of these cases were admitted in the later stages of the disease, and of course a majority of them terminated fatally; but there was no communication of the disease to the other patients in the wards, where they had been placed indiscriminately, nor to the nurses and attending physician; and we were informed by our friend Dr. Gerhard, that the same thing has occurred every summer for the last twenty years. Now, these are facts which a strict contagionist cannot possibly explain. We know it is sometimes said by such an one that measles or small pox sometimes occur without spreading, but such is not a true parallel. It is comparing a rule with an exception. Was it ever known that a number of cases of measles or small pox were thrown, here and there, through the wards of a hospital for a succession of years, without an epidemic being generated? We think no such fact is on record.

But in direct opposition to this kind of evidence, we may cite such an incident as the following: A schooner leaves New Orleans, laden with goods for the interior. She crosses the lake and enters one of the bayous which leads up into the piney woods country. By the time it

reaches its destination, two or three of the men are down with the fever, contracted while in port. Here, the schooner is visited by some farmer from the heart of the pine woods, who goes down to the vessel to obtain his supplies from the city. He sees the suspicious looking cases on board, hurries off with his goods to his home, among the pines, where the sands are too barren to produce Yellow Fever or any other malignant disorder, and the next day is attacked with a fever, which ends in black vomit. This disease is communicated to other members of his family, and from them to the neighbors, who humanely come to their aid; and thus it spreads, until a large community become the subjects of this fearful scourge. We have here drawn no imaginary sketch, but have only selected one from a multitude of similar cases, to illustrate our meaning. Every one knows that such things were of every-day occurrence during the last two summers in the Southwest. How will the non-contagionist account for this? Perhaps he may suggest a coincidence, but beyond this he cannot go, knowing, as he does, that the transmissibility of the disease is incontestable. No truth is more strongly fortified by testimony than this. How are these two apparently contradictory facts to be explained? It is evident that the specific poison of Yellow Fever was introduced from abroad in both instances; in one place it is communicated, in the other it is not. The reason plainly is in the different locality. In the first instance it did not spread, because the local element was wanting which is necessary to the propagation of an epidemic influence; in the latter case it was present and the result is, an epidemic is generated, in exact accordance with the theory of Dr. Carpenter, which requires, for the production and propagation of an epidemic, the conjoined influence of a general with a local element, neither of which, singly and of itself, is sufficient to produce the epidemic disease.

We have premised these views as to the mode in which epidemics are propagated and extended in order to show what our exact meaning is, when we assert and undertake to prove that Yellow Fever, *as an epidemic*, is an imported disease—the *foreign element* which is prerequisite to its production is brought to our shores by the ships of commerce.

We will now proceed to adduce some proof, in support of our previous statement, that the malignant forms of epidemic Yellow Fever, which have prevailed at different periods in our chief commercial cities, were not of domestic origin, but were the result of an infection,



introduced from places within the Yellow Fever zone, where the disease is known to be endemic, and where it prevails perpetually.

In an examination of the literature of this subject in search of data for forming an opinion of its cause and mode of propagation, we are perplexed and almost bewildered by the strange diversity and contrariety of testimony which has been advanced by the partizans of the different theories of contagion and non-contagion. An incident or two, taken from a mass of similar statements, will illustrate this.

In the year 1792 the good ship "Hankey" sailed from England for the African coast, with some two hundred persons on board, most of them going out with the purpose of colonizing on the island of Boullam, which is situated on the coast of Africa, about 11 degrees north of the equator, near the mouth of the Rio Grande. Disappointed in their expectations, and discouraged by the reception given them by the cannibals who they found in possession of the island, they retained the ship and remained on board. About nine months after their arrival out, a most malignant epidemic broke out among them and carried off three-fourths of their number. At the close of the epidemic, with the seeds of infection still remaining in the vessel, the captain, says the narration from which we borrow the account, "finding the water at Boullam unwholesome, proceeded with his ship to Bissao, where there was a Portuguese settlement, for a supply. The ship was navigated by about twelve seamen, most of whom had not experienced sickness, and had been probably procured from Sierra Leone: at any rate they were then taken on board for the first time. Of these, before the return of the Hankey to Boullam, nine died; and the remainder, with the captain, were reduced to a deplorable state. The time for which the Hankey was chartered being expired, Mr. Paiba, the supercargo, with his family, intended to return to England in her; but as no seamen could be procured, they were obliged to proceed to sea, having on board the captain, sick, and only the mate, Mr. Paiba, and two seamen to navigate the ship. With much difficulty they arrived at St. Jago, where they fortunately found the Charon and Scorpion ships of war. Capt. Dodd, of the former, humanely rendered them every service in his power, and on leaving them put two men of each ship on board the Hankey. With this aid they proceeded to the West Indies, a voyage to England being impracticable in their wretched state. On the third day after leaving St. Jago the men procured from the ships of war were seized with the fever, which had carried off three-fourths of those on board the Han-

key at Boullam; and, having no assistance, two of the four died; the remaining two were put on shore here (at Grenada) in the most wretched state possible. Capt. Dodd, on his arrival at Barbadoes from the coast of Africa, was ordered by Admiral Gardiner to convoy the homeward bound fleet of merchantmen. In the execution of his orders, he came to Grenada on the 27th of May, and learning of the mischief which the Hankey had been the cause of, mentioned that several of the Charon's and Scorpion's people were sent on board the Hankey at St. Jago to repair her rigging, &c.; that from this circumstance, and the communication which his barge's crew had with that ship, the pestilence was brought on board both ships, and that of the Charon's crew thirty died, and of the Scorpion's about fifteen. The Hankey arrived at the port of St. George\* on the 19th of February, in the most distressed situation, and for a few days lay in the bay, but was afterwards brought into the harbor."

From this vessel the disease spread among the shipping in her immediate vicinity; "these communicated the infection to the ships nearest them, so that it gradually spread from those nearest the mouth of the harbor, where the Hankey for some time lay, to those at the bottom of it, not one escaping, in succession. In the short space of time, from the beginning of March to the end of May, 200 of about 500 sailors, who manned the ships in the regular trade, died of this fever.

"About the middle of April the disease began to appear on shore. The first house it showed itself in was that of Messrs. Stowewood & Co., situated close to the wharf; and the infection was evidently introduced by a negro wench *who took in sailors' clothes to wash*. The whole of the family were successively afflicted with it, and by them communicated to all those with whom they had intercourse. The manner in which it spread in the town clearly evinced its contagious nature; for all, who from friendship, business, or duty communicated with the diseased, were themselves infected; and no instance occurred wherein the contagion could not be traced to its particular source. That part of the garrison quartered nearest to where the Hankey lay, were the first of this class of men to receive the infection. One of the officers visited the Hankey, and, with two or three soldiers who rowed his boat, remained on board some time. The consequence of this imprudence was fatal to himself almost immediately after, and in a little time to many of the men, and so spread through all the regiments quartered there.

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\* The port of Grenada, the most southern of the Carribean Islands.

About the 1st of June the disease began to appear among the negroes of the estates in the neighborhood of town; but it did not spread much among them, nor was it marked with the fatality which attended it when it appeared among the whites.

"The disease, in the course of the months of May, June, and July, appeared in several distinct and distant parts of the country, whither the infection was carried by persons who had imprudently visited infected houses in town.

"But the infection was not confined to Grenada alone; from this, as a focus, it spread to the other islands—to Jamaica, St. Domingo and Philadelphia, by means of vessels, on board of which the infection was retained by the clothes—more especially the woollen jackets of the sailors."\*

This statement, made by Dr. and Sir Colin Chisholm, the surgeon to his Majesty's ordnance in Grenada, bearing so strongly in favor of the importation and contagion of Yellow Fever, was not allowed to pass unchallenged. Dr. Bancroft, a physician and writer of distinction in Great Britain, soon made his appearance in the arena, as the chosen champion of the non-contagionists. He published a long and elaborate essay, setting forth the inaccuracies of Dr. Chisholm's report, and the false reasoning of his partizans. He asserted the Grenada fever was of local origin; that the Hankey carried no infection there; and that the fever on the African coast, which was so fatal to the Boullam colonists, was only the ordinary remittent of that country, aggravated by the depressing circumstances in which the colonists were placed. From that day to this, the strife of the contending parties has kept pace with the continuance and spread of the disease in question; and sometimes the heat of controversy has risen so high that duels were among the fruits of it. The incident is but of yesterday, which shows the same diversity of opinion still exists in regard to the origin and cause of epidemic Yellow Fever.

"To prove that Yellow Fever can be imported into a place, I should take an island in the middle of the ocean. I would surround it with other islands, possessing the same characteristics of climate and soil, and peopled by the same race. I would have this island healthy for at least fifty years. Then I would have arrive at it a ship scourged with Yellow Fever. This ship should implore succor, and it should be granted, yet, as a wise precaution, some kind of quarantine should be established.

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\* Chisholm on malignant fever, p. 53.

Of all the inhabitants of the island some few only should be brought into the immediate presence of the sick. Within the period fixed by experience for the incubation of this disease, one or two of these few should begin to suffer from the same disease, then from these sufferers the disease should gradually spread as from a centre, until the whole island was infected. While, however, this one island was thus ravaged, the adjoining islands, which the infected vessel had not visited, should remain perfectly free, in order to prove that there was no (so styled) epidemic constitution. Then, if all these conditions were fulfilled, I would confess that Yellow Fever *may* be contagious and *can* be imported.”\*

All these conditions were fulfilled, as we learn from the same journal from which the above suppositious statement is taken, in the case of the island of Boa Vista. The English steamer Eclair was on her passage home from the coast of Africa, where she had contracted the Yellow Fever. This increased so rapidly, after starting on her voyage, that she was compelled to land in distress at Boa Vista, the most easterly of the Cape de Verde group of islands. Here her crew was dispersed on shore, and the people of the island, employed in cleansing the ship, which remained there about three weeks. The inhabitants soon took the disease, which spread over the whole island. Among the first who were taken with the disease were persons who had *washed the clothes of the sick seamen*—had nursed them—and among those who had been engaged in cleansing the ship. We cannot dwell on the details of this occurrence. The foregoing are the main facts, and we believe have never been questioned; but what we wish to note at present is the remarkable difference made in the reports of two medical men who were sent by the English government to investigate the phenomena of this epidemic. Dr. McWilliam, who was first dispatched for this purpose, reported in accordance with the above facts, and traced its origin directly and solely to the importation of the infection by the steamer Eclair. The government of Great Britain has ever opposed any restrictions on her commerce, and it is plainly her interest to do so. In this case she sent a second medical examiner, who reported more consistently with the governmental views and policy; not, however, questioning the main facts as recorded, but giving more prominence to influences of a local character, and so attempting to demonstrate its domestic origin.

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\* British Foreign Medical Chirurgical Review, Oct. 1852, p. 215.



With this report the government remained satisfied. Probably had they tried a third commissioner he would have combined the leading views of his predecessors, and thus compromised the difficulty.

These examples of the great discrepancy between medical authorities on a subject which we would naturally suppose could be placed beyond the region of doubt, being rather a matter of observation than of opinion, shows with what tenacity men will cling to preconceived theories and doctrines, not susceptible of absolute demonstration, and that those who are already committed to either side of the question as to the foreign or domestic origin of Yellow Fever, will not be much influenced by any amount of testimony which does not favor his peculiar views.

"A man convinced against his will  
Is of the same opinion still."

It is worthy of remark, in reviewing these cases which have been the source of so much contention and bitter discussion, that the *first* reports made in both instances, were in favor of the importation of the disease, and that the facts stated by Dr. Chisholm came under his own immediate observation, while the views of his opponent were the result of investigations made at a distance from the scene of actual occurrence, and sustained by indirect evidence.

The history of our own navy and commerce on the African coast, and our more recent experience of the manner in which Yellow Fever is extended and propagated, both go to substantiate the statement of Dr. Chisholm. In regard to the Boa Vista Fever, we believe it is generally conceded to have been imported by the steamer *Eclair*.

That Yellow Fever is not of indigenous origin in the cities of these United States, where it now prevails in an epidemic form, or has heretofore visited, is rendered almost indubitable by various considerations.

1st. The fact that commerce has ever been suspected or charged with being the channel by which this malign influence has been brought to bear with such disastrous effect upon us, is strong presumptive evidence in favor of importation. There is no reason *a priori*, why it should be attributed to such a cause as this. The process of reasoning in regard to it would naturally be somewhat in this manner: Here, in New Orleans, prevails a highly malignant and pestilential disease, known to be endemic in tropical climates during certain seasons of the year. This disease has certainly a local origin somewhere, and what place can be thought more likely to generate such a pestilence than this city. Situated on a marsh; possessing no capabilities for sufficient drainage; surrounded by lakes, pools and morasses; liable to be inundated by the river, which rises an-

nually far above the level of the streets, and sometimes menaced from the rear by the storm-tides which dash toward it from the lake; this city, thus situated, is constantly receiving an influx of people from a more temperate climate, who are known to be the easy prey of this insatiable demon of pestilence. These immigrants are found living in habitations, crowded to an incredible degree, often in extremest want and in circumstances the most demoralizing and depressing. The grogshop, too, stands open at every corner, adding its fiery ingredient to the poison-cup of death. Surely, such a people, so situated, breathing malaria within doors and without, are the fit subjects for such a pestilence as often riots among them during the summer months, and require no agent from abroad to taint the air with contagion and death. Such, we conceive, would be a most natural train of reasoning in regard to this subject. But in despite of all these probabilities, we find there has always been a large and now rapidly increasing party, entirely competent to judge in the premises, who hold that the seeds of this infection are always of foreign origin and have been conveyed to our shores by the ships of commerce. Now, this fact we conceive is *prima facie* evidence of the importation of this formidable disease.

When we turn our attention to the evidence, which may be supposed has produced this conviction in the minds of so large a number, we perceive at a glance one striking fact in regard to Yellow Fever; that is, the singular proclivity it seems to have for seaport towns and the more active marts of commerce. Perhaps this feature of the disease has been nowhere more strikingly exemplified than in its ravages around the coast of Spain. Let any one take up the map of that country, and he will see that nearly every seaport on that peninsula, from Seville to Barcelona, has been visited by this pestilence.

On our American coast every city, from Quebec to Rio Janeiro, has suffered from its ravages.

Before the first settlements were made on the site where New Orleans now stands, Biloxi, an older settlement, was visited by Yellow Fever. In those days Biloxi was the commercial port of the Lake Shore; but as soon as commerce was diverted to the new settlement of Orleans, we find Yellow Fever was transferred with it, and now we are not aware that it ever reaches the former place except by extension from this city.

The history of this fever in our northern cities is also full of instruction on this point. In reading the reports made of it near the close of the

last century, and during the early years of the present, we notice how invariably its first ravages are in localities bordering on the water, where the foreign shipping lie. In New York, Yellow Fever is constantly associated with such names as Old Slip, Peck Slip, New Slip, and the like—all these places being along that part of East River, where vessels from abroad discharge their cargoes; not on the North River in any one instance, where the commerce of the interior finds a landing, and where all local causes of disease would probably be as active as elsewhere. In Philadelphia, where the disease was well known half a century ago, we find it was always on Water street, in the immediate neighborhood of the wharves; that it first made its appearance, not on the banks of the Schuylkill, which is known to be a miasmatic district, and therefore the more probable point for its generation. In Baltimore, however, it has always been a favorite theory to ascribe its origin to marsh miasma, because, in that city, it has been chiefly confined to a part of the town called Fell's Point, which is a low and marshy neck of land extending down the harbor, the soil not unlike that on which New Orleans stands. Some of it has been artificially made for wharves, and in most of the cellars we are told water stands. Here would seem to be reason sufficient for pronouncing the disease of local origin, did such a condition of things obtain in other places where it is wont to appear. In strict analogy, however, with the facts we have already stated, we are told that "Fell's Point is a place where all ships of considerable burthen lie, the depth of water not permitting vessels of this description to go farther. This is also the principal place of residence for sailors."\*

In New Orleans the same thing has always been observable. The first cases of Yellow Fever which enter the Charity Hospital are almost invariably sailors, or those recently arrived on shipboard. This fact we cannot reconcile with the idea that the disease is wholly of local origin. Sailors constitute a very small minority of the unacclimated who are found in the city at such a time. The immigrants for the twelve months preceding are surely as liable to an endemic disease as those who are fresh from shipboard. So common and so frequent has been the prevalence of this disease among sailors that a distinguished English writer, Sir Gilbert Blane, has made it the prominent subject of a work on the "Diseases of Seamen," and in France it was formerly known by the title of the Sailor's Fever—*Fièvre des Matelots*.

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\* Medical Recorder, Vol. III.



case, we think, are significant facts in regard to this fever, and tend to show that it cannot be of local origin; or, if so, the *locality* must be in the neighborhood of ships and receiving wharves. It is evident from these facts alone that the cause is not in marsh miasma; nor do we see that it gives any foundation to the opinion that the exposure of fresh earth to the sun's rays, by grading and excavation, has anything to do in originating the disease with us.

The views of Dr. Cartwright, who attributes the origin of Yellow Fever to the same causes which in colder climates and seasons are productive of Typhus, viz: the crowding of the poor in ill-ventilated apartments and tenements, where, deprived of all the comforts of life, breathing a confined atmosphere charged with animal exhalations, the poor poverty-stricken inmates dwell from day to day during the long heat of a southern summer, appear to us to be a more rational explanation of the matter; but we cannot think this is all that is necessary to the production of Yellow Fever. It requires a spark from some other source to ignite this combustible material and start the flame; else, why do we not see an epidemic created wherever these same conditions exist? There are cities on this continent where a greater mass of suffering poor are crowded in cellars and hovels, and as a class more destitute and drunken, than any in New Orleans. In the city of New York 20,000 of its inhabitants live in cellars, and many of them scarce ever see the light of day. Why does not Yellow Fever invade those miserable abodes of filth and squalid poverty? If impure air and a high temperature are sufficient to produce Yellow Fever, why was it that in the summer of 1853, when in New York they numbered their sun-smitten victims by hundreds in a day, there was not such an epidemic generated along the Bowery or down in that maelstrom of misery, the Five Points? It is evidently because the peculiar virus was wanting which gives effect to these pestilential materials. Yellow Fever has been said to be the result of animal decomposition, of putrescent vegetation, of all the filth and feculence which collect in cities where the means of sewerage and drainage are insufficient; but it is palpable, from the numerous instances in which towns in the same latitude subject to the same local influences have escaped, that to no such cause can it be attributed. Not all the rottenness in Denmark, and out of it, can generate an epidemic of Yellow Fever beyond the Yellow Fever zone, without the introduction of the specific infection which is the essential cause of the disease. Whence comes this infectious principle? We have said

it reaches the cities of these United States through the channels of commerce, chiefly from the West India part of our trade. We will introduce some further testimony in proof of its importation in this manner, and must beg the indulgence of our readers while we cite some cases of its introduction into American ports by ships, which are so striking and conclusive that we think the foreign origin of the disease, *in some instances* at least, is undeniable.

"On the 10th of June, 1794, the Yellow Fever appeared in *New Haven, Ct.* Several deaths having occurred from this disease, the selectmen of the town were requested by the inhabitants to institute a diligent inquiry into its origin. The investigation resulted in the conviction of everybody, that the disease had been brought from Martinique by the sloop *Iris*, Capt. Truman. The facts which led to this opinion were, that no person had been sick of Yellow Fever before the arrival of this vessel; that this vessel lay at the wharf at which the first cases had occurred; that her captain and crew had all been sick of the disease in the West Indies; that she had brought home, in a chest, the clothes of one of the seamen who had died of Yellow Fever in Martinique; that these clothes, among which were some which this man had used during his illness, were unpacked in the presence of four persons, three of whom sickened and died shortly after this exposure; and, finally, that no individual sickened in the whole city, unless in consequence of attending the sick, or of exposure to some sort of contagion."\*

In very much the same manner was the disease introduced into *Providence, R. I.*, in the year 1805. It is stated that "at the time when the fever made its appearance in that city, and for a long time before, the town was remarkably healthy; that the district in which the disease appeared was remarkably clean and free from filth; that with three or four exceptions, all the cases occurred in the neighborhood of the wharf at which foreign vessels usually unloaded; that vessels were permitted to come up to the town without cleansing or performing quarantine; that immediately before the commencement of the alarm, three vessels, on board of which the Yellow Fever had prevailed either in the West Indies or on the homeward passage, had arrived in port and deposited their cargoes at the wharves in the immediate vicinity of the first cases which occurred; that upon the removal of these vessels and the inhabitants of the sickly district the disease disappeared."

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\* Medical Recorder, vol. IV, p. 280.

In 1819 the disease was imported into *New York* from the neighboring city of Baltimore, by a coasting vessel, and was communicated to persons living near the wharf where such crafts generally lay. *A woman on shore washed the clothes* of a man who had died at sea of the disease.

"In 1820. the fever appeared in *Middletown, Ct.*, and was traced to a diseased vessel from the West Indies. She first lay in front of the town near its centre, and the fever spread in her immediate neighborhood. She then proceeded to a point in the upper part of the town, from which the disease again appeared around her; from thence she passed up the Connecticut river to Hartford, and was again the centre of a new infection of the disease."\*

In 1821 the Yellow Fever was epidemic in *Norfolk, Va.*, and was imported there, as will appear from the following statement: "On the 20th of July a vessel from Point Petre, Guadaloupe, laden with rum, sugar, and molasses, arrived in the harbor. Having discharged her cargo at an upper wharf, her bilge water was pumped out on the dock between Southgate's and Warren's wharves, which was found to be so putrid and offensive as to render it expedient that the doors and windows of a neighboring house should be closed in order to exclude the effluvia arising from it. This and Southgate's wharf were about equally distant from the vessel—one on the east the other on the west side of the dock. On the 18th of August a clerk in the warehouse was taken sick with the fever and died; then several females in the same neighborhood; also, a man and boy who had assisted in pumping the vessel: and so the disease spread over the whole place."

This case is almost an exact counterpart of the occurrence in Philadelphia of the bark Mandarin. The pumping of stinking bilge water is too common along our wharves to be looked upon as the sole cause of malignant disease; and we notice in both cases the vessels came from West Indian ports, when the fever was there prevailing, and we infer the presence of a specific infection in the ships which made them the centre of so fatal an influence.

The appearance of the disease in Philadelphia in 1820 was somewhat in the same manner. It was traced at first to some decaying hides and damaged coffee, which lay exposed upon the wharf. But on farther investigation it was found these articles had been deposited there by a

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\* Medical Recorder, volume IV.

brig from Lagaira. We have received some of the particulars of this case from a private source, but they are of the most reliable authority and so graphically related that we cannot forbear to present them.

A medical gentleman, who visited Philadelphia for the purpose of examining the matter, thus reports: "I went to the wharf on Walnut street, where the disease first appeared—inquired where the first case occurred—was pointed to the house—went there, and was told it was a hand who assisted in discharging the cargo of a brig from Lagaira; he died, and very soon all who had been engaged in the work sickened and died and nearly all who were employed in removing the cargo from the wharf. I asked, did it appear nowhere else? Was answered, no: the district was fenced in and all intercourse with it cut off. Was there then no cases elsewhere than on the wharf?

A. None, except a few cases at Bristol.

Q. Where is Bristol?

A. 20 or 30 miles up the Delaware river. I proceeded there forthwith; inquired of the landlord if they had Yellow Fever there that season; was answered in the affirmative. I asked, where? and was directed to a house where the first case occurred; found an old woman there, to whom I addressed my inquiries.

Q. Have you had Yellow Fever here?

A. Yes.

Q. Did any body die?

A. Yes, my two daughters.

Q. How, and where were they taken?

A. Their brother's trunk or chest was sent up from Philadelphia, he having died on board a brig on his return home, from Yellow Fever. I told his two sisters to carry it to the beach, open it and wash the clothes, then put them back and bring it here. They did so, and were both taken sick that night and died of black vomit in three days.

Q. Who were the next victims?

A. They were two women who were washing on the beach close by my daughters, on the same day. One of them died, the other recovered.

I then ascertained that this young man was the mate of the brig from Lagaira, that landed the damaged hides and coffee, and that he died on board, of Yellow Fever a few days after leaving port."

The foregoing sketch contains some very striking "coincidences," as the non-importationists would call them.

In 1800 this disease was carried from the West Indies to Europe, to the city of Cadiz. In 1803 it was conveyed in the same manner to Malaga. In 1804 it appeared at Gibraltar—was carried there as it appeared from a judicial examination, by a shopkeeper who had been to Cadiz and contracted the fever there. Of the garrison, about 1000 died, and near 5000 of the citizens. This station is not subject to miasmatic diseases, but is ordinarily most healthy. In 1802 the whole mortality was only 35. Nor do we suppose they are much given to grading or excavation there; at least no such cause is stated to have existed.

We will here give an example of the disease being transmitted from an infected vessel to a healthy one, while yet at sea: "On the 16th of May, 1795, the British frigates *Thetis* and *Hussar* captured two French armed ships from Guadaloupe, on the coast of America. One of these had on board some men ill of the Yellow Fever; and, out of fourteen hands, sent from the *Hussar* to navigate and take care of her, nine died of this fever before she reached Halifax, on the 28th of the same month, and the five survivors were sent to the hospital, sick of the same distemper. Part of the prisoners were sent on board of the *Hussar*, and though care was taken to select those seeming in perfect health, the disease spread rapidly in that ship, so that near one-third of the whole crew was more or less affected by it."\*

That this infection may sometimes be introduced from abroad, without our being able to trace the connection between its first outbreak as an epidemic and the case or circumstances of its importation, is shown by the following account of its introduction into Charleston in 1843. It is impossible, in large towns, to trace the origin of such diseases, and doubtless many cases, which look like spontaneous generation of the disease, are owing to some such occurrence as that we now relate. In 1843 the fever invaded a portion of Charleston Neck, in the vicinity of Wolfe and Reid streets. The first case, admitted to be Yellow Fever, occurred on the 14th of September, on the southwest corner of Wolfe and Meeting streets. The cause, of course, was referred to the general and local conditions of the climate and soil, there being no apparent reason why it should be considered of foreign origin. From the following letter, received after the lapse of sometime, it appears there was such a cause in existence, and no doubt can be entertained that this was the reason of its invasion in that particular quarter of the town.

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\* Sir Gilbert Blane's letter to Hon. Rufus King, 1798.



"On the 27th of July, 1843, I arrived in Charleston in the brig Hayne, Capt. Treseott, from Havana, suffering under fever. Dr. Simonds came on board, and was told by Dr. Wurdeman (also passenger) that no Yellow Fever was on board, he thinking that I had common bilious fever. The day before I left Havana, an Englishman, who soon after died, was laying for hours with a high fever on my matrass. I took him off with much difficulty, as he was delirious, rolled up my matrass and sent it on board the Hayne. I think I put it in my berth and slept on it during the passage. The matrass went with my baggage, and was given to a negro in the house. I was taken to the house, northwest corner of Wolfe and Meeting streets, as soon as possible after the vessel touched the wharf, where I remained until I recovered, fifteen days in bed, and then went to Aiken. The first deaths I heard of in my neighborhood were two Dutchmen in a small house on the south side of Wolfe street, nearly opposite my room.\* Yours,

"E. E. HEWES."

We might continue to cite cases like the foregoing, showing the manner in which this disease has generally been introduced into American ports, but we think enough has been related for our present purpose. We see no reason why New Orleans should differ, in this respect, from other cities of the Union. It is difficult to decide how far from the equator the Yellow Fever zone extends; but we should judge that 30 degrees was beyond its limits, both on this and the eastern continent. A late writer suggests the limits of black frost as the extent to which the origin of Yellow Fever is carried. However this may be, it is but just to give our city a fair trial before she be condemned as guilty in this charge. It is generally admitted that the towns in the southwest, which suffered so lamentably during the last two summers, had the infection conveyed to them from this city. In a report made by Dr. J. L. Riddell, of the Sanitary Commission, appointed *after* the epidemic of 1853, we find this point is thus decided: "That the towns and plantations of the southwest have this year derived their Yellow Fever from New Orleans." Now, the conclusion we wish to draw from this is simply that the disease, being known to be exportable from here, *may* have been imported. That such was the fact, we think there is strong evidence in the history of that epidemic, as given by Dr. Fenner. It is clear to us that the *epidemic* first began near the river in the Fourth

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\* Hume on the Sources and Origin of Yellow Fever.

District, as before referred to, and that the first case was found in the ship *Augusta*, which came up the river in company with an infected vessel, the *Camboden Castle*. A similar state of things doubtless occurred in the neighborhood of the lower shipping; and the fact that the centre of the city did not receive the infection as soon as the parts above and below, is most probably to be accounted for by its having the interior commerce lying along its levee instead of ships from foreign parts. It cannot be denied that the epidemic of 1853 had two foci of infection; one in the upper and the other in the lower part of the city, corresponding with the two divisions of shipping; and these two epidemics continued, each widening its sphere, until they met and the whole city was enveloped in a common doom.

But we have said enough on the subject of the importation of Yellow Fever, and we owe our readers an apology for dwelling so long on so hackneyed a theme. The day has gone by when there was a necessity for argument on this point. Whether Yellow Fever be endemic in New Orleans or not, one thing is certain, it can be transported from one place to another, and the rapidity of its communication is in exact proportion to the facilities for commercial intercourse and trade.

There is one other point in this connection we wish to notice in passing, viz: the remarkable exemption of interior towns, except when in direct connection with seaport cities where the epidemic is raging. We do not know of a solitary instance of the disease originating in an interior town of the United States, and spreading from thence as from a focus of infection; nor do we admit that it has ever existed even as an endemic disease in any place so situated. Here we are prepared to be met by the famous Gallipolis Epidemic—the stronghold into which non-importationists have invariably resorted when assailed in this quarter. It is described by a traveler, who was an eye-witness to it, as follows:

*Extract from Mr. Andrew Ellicott's voyage down the river Ohio in the month of November, 1796.*

“November 15.—Arrived at Gallipolis about 11 o'clock in the morning. This village is a few miles below the mouth of the Great Kanaway, on the west side of the Ohio river, and situated on a high bank; it is inhabited by a number of miserable French families. Many of the inhabitants this season fell victims to the Yellow Fever. The mortal cases were generally attended with the black vomiting. This disorder certainly originated in the town, and in all probability from the filthi-



ness of the inhabitants, added to an unusual amount of animal and vegetable putrefactions in a number of small ponds and marshes within the village.

"This fever could not have been taken there from the Atlantic States, as my boat was the first that descended the river, after the fall of the water in the spring; neither could it have been taken from New Orleans, as there is no communication at that season of the year, up the river, from the latter to the former of those places. Moreover, the distance is so great that a boat would not have time to ascend the river, after the disorder appeared that year in New Orleans, before the winter would set in."

This looks like very decided testimony in the case on hand; but a traveler's story must always be received with some grains of allowance. We prefer the statement made by Major Prior, who was on duty at the military post there during the epidemic, and who made the following report, in writing, to Dr. Potter, of Baltimore. Dr. P. was an able champion of the non-contagion party, and obtained this account of the Gallipolis fever to corroborate his own peculiar views regarding the cause and origin of Yellow Fever. Major Prior states what he had seen in the following words:

"As the garrison was severely afflicted by this fever, I could but take great interest in it. The fever was, I think, justly charged to a large pond near the cantonment. An attempt had been made, two or three years before, to fill it by felling a large number of trees that grew on and near its margin, and by covering the wood thus fallen with earth. This intention had not been fulfilled. In August the weather was extremely hot and dry; the water had evaporated considerably, leaving a great quantity of muddy water with a thick, shiny mixture of putrefying vegetables, which emitted a stench almost intolerable. The inhabitants of the village, principally French, and very poor as well as filthy in their mode of living, began to suffer first, and died so rapidly that a general consternation seized the whole settlement. The garrison continued healthy for some days, and we began to console ourselves with the hope that we should escape altogether. We were, however, soon undeceived, and the reason of our exemption heretofore was soon discovered. The wind had blown the air arising from the pond from the camp, but, as it soon shifted to the reverse point, the soldiers began to sicken; in five days half the garrison was on the sick list, and in ten half of them were dead. They were generally seized by a chill, followed by a headache,

pains in the back and limbs, constant sick stomach, or vomiting, and generally, just before death, with a vomiting of matter like coffee grounds. They were often yellow before, but almost always after death. The sick generally died on the seventh, ninth, and eleventh days, though sometimes on the fifth and on the third. As some decisive measures became necessary to save the remainder of the troops, I first thought of changing my quarters, but as the station was in every respect more eligible than any other, and had been made so by much labor and expense, I determined to try and change the condition of the pond, from which the disease was believed to have arisen. A ditch was accordingly cut; what little water remained was conveyed off, and the whole surface was covered with fresh earth. The effects of this scheme was soon obvious. Not a man was seized with the worst form of the fever after the work was finished, and the sick were not a little benefited; for they generally recovered, though slowly, because the fever became a remittent, or gradually assumed the intermittent form. As soon as the contents of the pond were changed by cutting the ditch, the cause (whatever it was) seems to have been incapable of communicating the disease in its worst form.”—[Medical Recorder, Vol. 1, 1818.

This report of Major Prior's must be considered at least as semi-official, but we do not acknowledge that it establishes the point at issue. We doubt whether the disease he describes was Yellow Fever, and we think there is internal evidence in his statement sufficient to justify such a doubt. In the first place, it seems the epidemic did not continue during the full term of Yellow Fever epidemic, being cut short by draining the pond, conjoined with a favorable change in the wind. Now, the prevailing idea with us is, that Yellow Fever, as an epidemic, has a fixed and definite duration; and whatever effect such sanitary measures might have in preventing such an epidemic, they are utterly incompetent to cut it short after it is once started and in full career. It counter-marches the wind in all its changes, and defies the hurricane's power. The filling of the pond with fresh earth we deem peculiarly unfortunate, as that is a favorite method with some for producing Yellow Fever. Besides, Yellow Fever is known to be a specific disease—a disease sui generis and peculiar, and not, as some assert, an aggravated type of our endemic remittent and other fevers, and therefore not convertible, as the Gallipolis fever seems to have been, into those fevers.

The duration of the disease itself looks more like a type of malignant

bilious than of Yellow Fever. This, we think, is above the average for Yellow Fever.

We, therefore, question the conclusions drawn from this epidemic by Dr. Potter and others, who contend for the same doctrine of the miasmatic origin of Yellow Fever. At best it was but an endemic disease, for we do not hear of it as the focus from which an epidemic influence spread. But we should not have presumed to challenge this time-honored authority had we not the weight of a more experienced judgment than our own in the premises. We are happy to be in possession of the opinion of the chief officer of the medical staff of the western army at the time of the occurrence in question. We refer to Dr. John F. Carmichael, who was for many years in active service as surgeon both in the West and Southwest, and who had ample opportunities to become acquainted with the various diseases to which the army was subjected during that time. As surgeon in chief of the southwestern division he was well known in this community, and is doubtless still remembered by many of the older citizens of New Orleans. We are indebted to Dr. John C. Jenkins, of Adams county, Miss., for these views of Dr. C. He has in his possession the papers of Dr. Carmichael and had frequent opportunities of hearing him express, verbally, his opinion of the matter. From a letter on the general subject we quote:

"There is one point upon which I desire to furnish you with the opinion of my maternal uncle, Dr. Carmichael. He, as you perhaps know, was senior surgeon to the army during the campaigns against the Indians of the Ohio, and also at Fort Adams from 1797 to 1804; he had seen Yellow Fever in the eastern cities, and felt great interest in the question, whether the disease had ever originated in the interior of our country. He assured me that in all the quarters of the army in the West, exposed as the troops were in their encampment in some localities to marsh malaria during the summer, that he had never seen a case of Yellow Fever among them. Neither was a case ever seen in all the years of their encampment at Fort Adams; and in regard to the sporadic cases reported by Volney as having been seen by him during his travels in the West, as well as the fever among the troops at Gallipolis, on the Ohio, he declared, after a searching examination, that he was satisfied that the disease there and elsewhere in the West was not Yellow Fever but the bilious remittent, aggravated by local miasma.

"Dr. Chapman, of Philadelphia, in an able paper upon 'The causes, phenomena and laws of epidemics,' published in the Philadelphia

Journal of Medical and Physical Sciences, November, 1824, asserts, that there is *no proof*, so far as he knew, *on which we can rely*, that Yellow Fever had ever prevailed out of our seaboard cities, although the contrary was affirmed; and in speaking of the cases alleged to have occurred in the interior, remarks, that he considers those cases very *imperfectly authenticated*. If the fever which originated in Gallipolis was Yellow Fever, as is contended by Dr. Potter and others, does it not strike you, as passing strange, that during the past sixty years not a well attested case, or any case at all so far as I have heard, should have been reported among the millions of the people of the West, exposed as they are, in many localities, to the malaria of rivers and swamps?

"Very truly, yours,

"JOHN C. JENKINS."

From the great doubt which is thus thrown about these instances of Yellow Fever, originating in the interior towns, we think the argument in favor of the foreign origin of the disease, drawn from their exemption, remains in full force. At best, they can be considered but as endemic fevers; and in no instance did these places become the centres of infection whence the disease radiated to surrounding and remote countries. They were not strictly examples of epidemic disease.

The argument in favor of the infectious character of Yellow Fever, drawn from *analogy*, is, we think, too important to be overlooked.

Yellow Fever belongs to a class of epidemics, some of which are confessedly contagious, and all possessing characteristics more or less striking. The different diseases of this class serve to illustrate and explain each other; and we are inclined to the belief that there is more profit to be derived from a study of the general laws which govern these epidemics, than from the constant wrangling and quibbling about individual cases, which are said to prove either contagion or non-contagion or any other such vague and unmeaning term as medical partizans may choose to adopt as a watchword. These epidemics, to which we have referred as a class, have some characteristics which are common to all, and so also have they, each one, its distinguishing features. For example, scarlet fever is a disease of childhood, for the most part. Yellow Fever, on the contrary, prevails chiefly among adults. Cholera attacks either indifferently. Plague is a disease incident to warm climates, but ceases when the temperature ranges above 80° Fahrenheit. Here are the distinctive features of diseases which have a strong family resemblance; and we are satisfied there is a law common to them all, in obedience to

which they are, under certain conditions, transmitted from place to place and communicated from the sick to the well.

Perhaps there is no disease to which Yellow Fever is so closely allied as the Plague; and this was probably more apparent in our late epidemics than ever before. The mode of propagation of the latter disease may probably throw some light on the former. It should at least be received as corroborative testimony. Concerning the causes of the Plague we quote from Dr. Wood as follows:

"It appears to be impossible to resist the testimony advanced in favor of the doctrine of contagion. Numerous instances are on record, in which a perfect isolation of large bodies of people has secured to them an entire, or almost entire exemption, whilst the disease was raging around them; and positive proof appears to exist, that the disease has been communicated, through individuals or families, from an infected to a healthy neighborhood. Persons exposed to the cause of the disease in a sickly district have removed to a distant and healthy place and have there died of the plague, and shortly afterwards numerous individuals, of their own particular family have become affected. Besides, the almost universal opinion of the community in which the disease prevails should be allowed some weight, as also should the fact that the Franks in the Levant, who take precautions against contagion, are much less frequently affected than the Turks, who are practical predestinarians and use no precaution. It would appear that certain individuals are insusceptible of the contagious influence under all circumstances; for, of those exposed to it in the highest degree, during its prevalence, many escape. It would appear also that the susceptibility of persons is generally much less under certain circumstances than under others; otherwise the sporadic cases which are asserted to be always in existence would be constantly acting as the centres of new infections. But these are no arguments against contagion altogether; for we find the same exactly to be the case with Scarlet Fever, and to a considerable extent with Measles, both of which are contagious. It is generally supposed that the contagion may not only be imparted from individual to individual, but that it may be conveyed, by means of clothing or articles of merchandize, from place to place; though some, who even admit personal contagion, deny the latter mode of communication. Difference of opinion has also existed as to the necessity of actual contact—some supposing that the poison is communicated like that of syphilis, only by the touch, others that it may be exhaled in an æriform state from the body, and,



like other contagious fevers, act through the medium of the atmosphere. Analogy is in favor of the latter opinion.”—[Wood’s Practice, Vol. 1, p. 367.

This description of Plague and its mode of propagation, only requires a change of names to make it applicable to much of our recent experience in regard to Yellow Fever.

The very striking analogy between Yellow Fever and Cholera is also worthy of notice. A late writer on the subject of Cholera makes the following very forcible observations:

“Its mode of progression favors the supposition of its being contagious more than it does that of being a non-contagious disease, dependent on some telluric or atmospheric influence for its development. It travels more or less slowly from town to town, overruns one country after another, taking often years to traverse a continent, now diverging, then retrograding or appearing to be arrested in its course. It advances along the great lines of communication that exist between different towns and countries, along the tracts of trade and the highways of commerce, and overspreads a country more or less quickly, just in proportion to the facilities of intercourse existing between its respective towns. This is the way that one would expect an infectious epidemic fever to propagate itself. How different from this the mode in which influenza develops itself, a disease unquestionably not contagious, and depending, in all probability, on telluric or atmospheric influence? This epidemic spreads itself with the utmost rapidity, affecting different countries almost simultaneously, and bringing whole continents under its influence at nearly one and the same time. But cholera took sixteen years to travel from Hindostan to Britain in 1832; it accomplished the same journey more rapidly in 1848; and the epidemic has reached us again after an interval of only five years; facts that militate against the idea of its atmospheric origin, and show that its progress is regulated, to a great extent, by the freeness and frequency of a communication existing between the towns and countries which are the scenes of its ravages. It reached us sooner in 1853 than it did in 1832, because the facilities of intercourse between Britain and the continental countries and the East have been greatly increased within the last twenty, but more especially within the last ten years. In fact, the rapidity of the march of the epidemic of 1853 over that of 1832 bears a strict proportion to the increased means of intercourse that have taken place during that interval between this country, the countries of the continent and the east; and were the means of intercourse between

the different countries of Europe and Hindostan still free, were the same freedom and frequency of communication to exist between them as occur between the large towns in this country, there is nothing improbable in the supposition that we should have the epidemic not after intervals of sixteen or five years, but have one epidemic following another in close succession, until the disease became endemic amongst us. Nay, for anything we know to the contrary, this may actually become the case with cholera.

“Again, cholera has never been known to have reached any place sooner than the means of communication existing between it and an infected town could have conveyed the contagion. And it has often taken a far longer time to arrive at a place comparatively near to an infected town, but where slow and unfrequent means of communication existed, than it has taken to traverse extensive tracts of land and ocean intervening between towns and countries having free and rapid intercourse with an infected part.

“In the first epidemic, of cholera, the disease appeared in Naples—which enjoys free intercourse with Marseilles, where the epidemic existed—about twelve months before it made its appearance at Rome. It took six months to spread from Oporto to Lisbon, owing to the siege having interrupted the free communication by water between them; while it crossed the Atlantic from Europe in a few weeks. This is strongly in favor of the contagious nature of cholera. The spread of cholera in a town has some striking points of resemblance to that of a contagious epidemic, as scarlet fever for instance, which must have been remarked by every one who has seen much of both diseases.

“The above circumstances, together with the consideration of the immunity from cholera enjoyed by the inmates of public establishments isolated from infected districts, and the breaking out of the epidemic in similar establishments where no such regulations existed; the many well-authenticated and probable cases of the importation of cholera into towns and villages by parties from infected localities; its gradual diffusion over a town and through a family; its march, so different from that of influenza, and so similar in many respects to that of epidemics, known to be contagious; such conditions as these should make us pause before we dogmatically proclaim cholera to be a non-contagious affection. It would be more prudent, and more in accordance with the spirit of true philosophy, to act upon the supposition that it is contagious until it has been proved not to be so, which I affirm has not yet been done. Nay,



the evidence respecting cholera supports the opposite conclusion, that it is a contagious disease, and that it never breaks out spontaneously, or through telluric or atmospheric agency, in any town, however filthy or otherwise defective in every sanitary improvement; that the contagion must always be imported into a town from an infected part by infected parties or otherwise; and that in whatever part or parts of a town the contagious matter or principle is deposited, be these the cleanest, most airy, and healthy, or the most impure, overcrowded, and worse drained parts of it; that from these centres or foci the disease will generally spread itself all over the town with greater or less rapidity, just in proportion to the nature of its situation, external conditions, and the state of its inhabitants; and that cholera, like scarlet fever or small pox, if imported into a town as defective in sanitary arrangements as Newcastle was said to have been at the time the present epidemic broke out in it, will spread itself more rapidly and with greater virulence over such a place than it will do over a town superior to it in point of cleanliness and sanitary regulations. The evidence with respect to the progress of cholera favors the supposition, that impure air, defective drainage and ventilation, and the use of water contaminated with decaying vegetable and animal matters, are never the cause, if they are ever even the occasion, of the irruption of cholera into a town; that they act as predisposing causes of cholera, and in all probability, in the case of this disorder as in that of other contagious epidemics, render it more deadly in character, and give more permanent and extensive bounds to its ravages, by concentrating, intensifying, and probably diffusing, the choleraic contagion. And therefore every endeavor should be made to remedy the defective sanitary condition of our towns, and every hygienic precaution adopted which might lead to the improvement of the general health of the inhabitants, and to the purification of all the probable mediums through which the choleraic poison may be conveyed into the system; so that, should cholera prevail in them, it may prove less destructive in its course, and shorter in its duration.”\*

We think our readers will be reminded by the above of many things in the history of Yellow Fever in the Southwest during the last two years and will imagine there has been some error among the types; and that, as the *errata* say, for “Cholera” read “Yellow Fever.”

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\* Rae's Observations on Cholera, *Lancet*, November, 1824.

But we have extended our remarks on this branch of our subject beyond the limits we had intended for it. We will now state and endeavor to support more briefly our second proposition, to-wit :

The epidemic virus of Yellow Fever, thus conveyed to our shores from abroad, is not extended and diffused through the atmosphere, except to a very limited extent, differing, in this respect, from a class of epidemics of which *influenza* may be offered as an example ; and that it is more allied, in its mode of propagation, to another class of epidemics, which are known to be contagious or infectious in their character, of which class *scarlet fever* may be cited as an instance.

We cannot but believe that the solution of this question is of vast importance in a practical point of view ; for, on this question, we consider, hinges that other grand question, so much vexed among us, as to the efficacy and utility of quarantine measures. If the epidemic influence, which is productive of Yellow Fever, is a pervasive principle, infecting the atmosphere to an indefinite extent and requiring only a certain condition of things in any given place in order to become localized and operative there, this local condition, acting somewhat as the metallic point attracts electricity from the cloud, then certainly all human attempts to barricade the enemy will be unavailing.

The celebrated Dr. Rush advanced the theory that the cause of Yellow Fever was in vegetable decomposition, and that the effluvia thus generated pervades the atmosphere generally. Many refer it vaguely to an epidemic constitution of the atmosphere over a large district of country, by virtue of which the specific infection, however communicated, becomes active and disseminates itself indefinitely.

If such be the character of the influence which produces epidemic Yellow Fever, thus subtle and all-pervading, there is poor encouragement to hope for any good results from quarantine. Dr. Cartwright asserts, quarantine can have "no more effect in walling out Yellow Fever than in excluding caloric, magnetism, or electricity."

From these views, respecting the nature of the Yellow Fever infection, we respectfully beg leave to dissent. We believe the extent of its diffusion through the atmosphere is very limited. We will now give our reasons for this opinion.

1st. We infer this to be the fact from the manner in which Yellow Fever extends and progresses through a city which it invades. It does not suddenly envelop the city as though the whole atmosphere was poisoned, but, beginning in points which become centres of infection,

gradually spreading and each widening its circle until the whole city is under its influence. Sometimes its progress along a street can be watched from day to day. Dr. Nott, of Mobile, says he has seen it pass from house to house with the regularity of a tax-collector. This is very much after the manner of contagious diseases, and shows nothing of a general epidemic constitution. Besides, it has frequently occurred that, by fencing off a district in a city where the disease is known to be prevailing, prevents the farther spread of the disease, by cutting off all communication with it. This has several times been tried with effect in the cities of New York and Philadelphia. One year a large portion of the city of New York, bordering on East river, was thus isolated, and the progress of the disease stayed. Very amusing stories were told at the time of countrymen, who were made to believe that within the mysterious enclosure Yellow Jack might be seen parading the street in his brimstone habiliments, engaged in his destructive work, in *propria personæ*; and many were seen gazing through the apertures of the fence, trying to catch a glimpse of his orange-colored majesty!

This "fencing off" a Yellow Fever district, however, teaches us an important lesson in regard to the mode by which Yellow Fever propagates itself, and the conclusion, we think, is unavoidable, that a disease which can be thus shut in a certain part of a city might be "walled out" altogether. We submit, with all deference, that "caloric, magnetism and electricity" cannot be enclosed by a board fence!

Another striking fact, pointing to this same conclusion, is the remarkable exemption of persons who are secluded in jails and asylums, situated often in the heart of an epidemic of Yellow Fever. This fact has been frequently noticed in this city. The inmates of the city prison have almost invariably escaped during the epidemics which have visited the city. The same thing was observed in regard to the Galveston nunnery during the last two years. We might cite numerous examples in proof of this, but it is unnecessary. The fact was noticed by Dr. Rush, in Philadelphia, a half century ago, and has been a matter of common observation from his day to the present. There is to us no possible way of explaining it except on the principle of *non-intercourse*; but what we wish more especially to deduce from it in this connection is, that there can be no general infection of the atmosphere of a city, or such phenomena would never have been noticed. It proves conclusively, we think, that our position is correct, in asserting that the epidemic views

of Yellow Fever is not diffused indefinitely through the atmosphere, but is extremely limited in the extent of its influence. Some writers have attempted to fix the limit of the infectious influence. Dr. Lind states, it did not extend *farther than six feet*. Sir Gilbert Blane has recorded that ships, anchored *two cables length* from shore, escaped the infection, if communication was cut off; and at Gibraltar, during the epidemic there in 1813, the following remarkable occurrence was observed:

“All those who cut off communication with the infected, escaped the disease; *of five hundred* persons confined to the dockyard during all the time of the sickness, there was not an instance of one of them being attacked, although this was, of all others, the most likely spot for marsh effluvia to exist, and which, during the fever of 1804, suffered equally with other places, in *consequence of the communication, not having been cut off*. In a street, within *thirty yards* of the dockyard, not a house escaped the fever.”\*

The numerous instances recorded of persons who have secluded themselves and families closely during the prevalence of epidemics, tend to establish the same point, and the popular opinion that persons who sleep in the upper stories of dwellings are more exempt than others, is also of significant import; and, in view of all this concurrent testimony, we feel prepared to state our last proposition, to wit:

The two foregoing propositions being established, it follows as an inevitable conclusion, that a well devised and rigorously enforced quarantine would be effectual in preventing the ravages of this formidable epidemic disease in this city.

The proof of this is, of course, involved in that of preceding postulates. If Yellow Fever has ever been imported into this city in any one instance, the plain duty in regard to the matter is, to prevent, if possible, a repetition of the infliction and its attendant horrors. And when, by a strict and persevering system of quarantine against all manner of foreign diseases, we shall have demonstated what are native and arising from domestic causes, we shall be able to devise such sanitary measures as the wants of the city may demand. The proper sewerage and drainage of the city is a question of which there can be but one opinion. Of the importance of well paved streets all are convinced. Perhaps the most difficult part of hygienic reform is that which relates to the habits and mode of life of the immigrants and poorer classes.

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\*Edinburg Med. and Sur. Journal, Vol. II, p. 394.



The crowding of so many human beings in small, ill-ventilated apartments must be productive of malignant disease at all seasons; and, added to this, is the great reform movement of the day, the license question. There can be no doubt that were a Maine liquor law practicable in this city, it would be the most effective of all sanitary measures and tend more to the hygienic improvement of New Orleans than all other means combined. The connection between intemperance and *crime* is plain and palpable to all—the connection between intemperance and *disease* is still more intimate and direct. We believe that for every one the grogshops send to the Recorder's Court and Parish Prison, they send two to the Charity Hospital and Potter's Field; and the remedy for both the one and the other is simply to remove the cause. The responsibility is resting on those who control the government of this city. Let them see to it.

We have extended these remarks beyond the limits of our first purpose. Our object was simply to try to elucidate the subject of the origin and mode of propagation of Yellow Fever, and to show the bearing it has to the much vexed question of quarantine. Of the policy or practicability of quarantine measures we have nothing to say; but it seems strange to us that the interests of our interior trade and of a large portion of the foreign commerce, together with the general prosperity of the city itself, should be thus sacrificed to the interest of the West India trade, which would only require to be restricted during a third of the year, and which would itself be the gainer if the health of the city could be preserved by those restrictions. These, however, are questions which do not come within our province. It has been truly said, that quarantine is no longer a *medical*, but a *mercantile* question. As such, we are content to leave it, but we believe there is decided testimony in favor of the utility of such a measure; and we are credibly informed that a majority of the medical men of this city are of the same opinion. We remember, during the days of our pupilage, one of our preceptors in the university—since gone to rest—made this the subject of an elaborate investigation, and urged strongly upon the legislature the importance of adopting precautionary means against the importation of this formidable disease. Perhaps it had been better for New Orleans if our city fathers had listened to the suggestions of Carpenter. The history of the last two years has done much to confirm the views he then expressed, and has fulfilled many of his predictions. We annex the conclusions he reached, after a careful and thorough examination of the whole subject:



"1st. Yellow Fever is a disease not native to the continent of America, but of foreign origin, introduced first from Siam, and afterwards aggravated in its type by the importation of the Bulam Fever. [See Historical Notice.]

"2d. No well authenticated case of the specific disease called Yellow Fever has yet been known to occur on the American continent under circumstances which precluded the possibility of infection, or even rendered it probable that it originated independent of transmission, either by going into infected localities, opening boxes or parcels from infected places, visiting boats or vessels from infected towns or opening rooms closed during the prevalence of an epidemic."\*

"3d. Since the introduction of Yellow Fever into America, it has always existed on some part of its coast. It prevails almost perpetually near the equator, where the temperature of winter is rarely low enough to destroy the infection; and it is carried by commerce to the countries lying north during the portion of the year between February and November, and to the regions to the southward from August to May. Thus in Surinam and Demarara it is indifferent as to seasons; in Campeachy, Vera Cruz and Havana it begins from February to May; in the United States from June to October; while at Pernambuco and Rio Janeiro it prevails generally from November to May. In this way it prevails perpetually, changing its place as the seasons vary, visiting the cities as soon as they are filled with fresh subjects, and where commerce offers facilities for its introduction.

"4th. Yellow Fever is a disease *sui generis* and peculiar, and not a grade or type of bilious fever, as is shown by the fact, that as in the plague, measles, small-pox and other specific and infectious diseases, one attack diminishes the liability to and almost exempts from a second attack; while it in no way diminishes the liability to bilious fevers at all. Neither do attacks of bilious fevers of the severest grades in any manner diminish the liability to take the Yellow Fever.

"5th. The Yellow Fever is not produced by a crowded population; neither by heat, moisture, marsh air, miasm, filth, nor by any combination and concurrence of these; otherwise it should always occur when these concur, and should not occur when the particular combination is absent, neither of which we find to be true.

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\* In large cities the complicated relations of daily life render it difficult to trace up the infection to its source, and it is only in small towns that we can always arrive with certainty at the desired information.

"6. The transmission of Yellow Fever depends exclusively on intercourse and commercial relations; any city being liable to infection in the precise ratio of its proximity to and of its unrestricted communication with ports or places where the disease is epidemic. It is from this circumstance that quarantine derives its pre-eminent efficacy in the exclusion of this disease from cities. Dr. Townsend remarks, that 'although the imperfection of medical science places the cure of the disease too often beyond our control, and that our means of counteracting its progress are limited, a wise Providence has indemnified us for these losses by putting into our hands an effectual method of totally preventing its occurrence, by shutting out its introduction from abroad. It is left for us to carry into execution what our own judgment must now teach us is the only resort that is left.' 'I firmly believe that the source of the disease can be only cut off by a rigorous code of quarantine restrictions.' [Townsend, p. 228.]

"7. Yellow Fever requires for its transmission a moderate summer temperature, a certain accumulation of people, as the crew of a vessel, or the population of a town, city, etc.

"8. Under certain circumstances of population and temperature, the introduction of persons with Yellow Fever, or of the air from places where the disease is epidemic, will frequently give rise to new cases, and finally to an epidemic of the disease.

"The infection may be conveyed :

"1stly. In boats or vessels which remain at the wharves, etc., in the infected city, receiving and discharging freight, and then closing their hatches upon the contained air, may become the real vehicles of the transmission.

"2dly. Boxes or bales containing goods, particularly woollens, if packed and closed in an infected atmosphere, may convey the infection.

"3dly. The clothes, bedding, etc., which have been used by persons with Yellow Fever, have been known to communicate the disease.

"9. Certain ports are almost annually subject to epidemics of Yellow Fever. These during the summer we should always regard as infected, and during that period we should enforce quarantine against all vessels sailing from or touching at them. Now, such rigor against the towns of the United States would be unnecessary, for should cases of Yellow Fever occur in any of our towns we should hear of it by mail before it could become epidemic in the place, and often in less time than it would be required for a vessel to arrive here from there. But with the West Indies

the case is different ; for we learn that at the quarantine in New York, the first intimation they have of the disease prevailing in these places, is from cases of, or death by it occurring on vessels arriving from there ; so that if we only enforce quarantine against those places where the disease is known to prevail, we may have "cargoes of infection" introduced into our cities before the health officer even suspects any place of being the seat of an epidemic.

"10. The healthy state of a vessel's crew is no proof that she may not be infected ; for the crew may all be acclimated, while the infection may be sealed up in her hold, or contained in the cargo, etc., and may only exhibit itself after the arrival at a healthy port, and among the un-acclimated persons who may visit or receive freight from her. [See Bayley's letter, Townsend, p. 92.]

"11. Cleansing and ventilation do not always destroy the infection of a vessel. Therefore quarantine, with its precautionary measures is not a sufficient guarantee for the public health. [See case of the brig Enterprize, also case of ship Diana, which introduced the disease into Brooklyn in 1823.]

"12. The only measure by which the public safety can be guarded is, to prevent all vessels coming from sickly ports or places from coming above the quarantine ground, whether their crews be sickly or not. Provision should be made, enabling them to discharge and receive freights, safely and expeditiously, and arrangements should be maintained by which the freight so discharged should be delivered to the consignees as soon as the time expires which may be deemed necessary for its perfect ventilation and disinfection.

"13. The principal difficulties against which it will be necessary to guard in establishing quarantine for New Orleans, is presented by the Tow Boats engaged in towing vessels from the mouth of the river. These boats, by communicating with infected vessels, or towing them up abreast, or even at hawser's length, become liable to infection, and in turn become the medium of infecting the city. The fact is established beyond a doubt, that in two of the years during the time the quarantine was in force here, the introduction of the disease was mainly attributable to these boats ; and experience should lead us to provide against similar disasters in future.

"14. It would certainly be safest to prohibit Tow Boats from towing up vessels from infected places at all ; as in the various turnings of their course and shifting of the wind, it is possible that infection would be com-

municated at even a hawser's length ; at any rate whatever the law provides should be most strictly and scrupulously enforced, and Tow Boats should be placed under the heaviest bonds to answer their observance of all the particulars of the law.

"15. An accurate account should be kept by the quarantine establishment of the state of health on board of each of these boats, which should be subject to the same kind of examination as vessels coming in from sea ; they should be required to report the occurrence of any case of fever, or any infectious or contagious disease occurring on board ; and during the period from the 1st of May to the 1st of December, these sick should immediately be sent to the quarantine infirmary.

"16 In case of their crews becoming infected with any of the contagious or infectious disorders contemplated by quarantine arrangements, they should be subjected to the same restriction and rules as the other infected vessels.

"17. They should be particularly prohibited from taking as passengers any person from vessels declared in quarantine, or from receiving any freight, box, parcel, or package, from on board of such vessels.

"A landing or wharf should be provided for Tow Boats at a point not in front of the thickly inhabited portions of the city."

